

## ABSTRACT OF THE DISCLOSURE

[0032] A voltage regulator with a variable compensation capacitor is capable of driving a large variable dynamic current load. The regulator includes an error amplifier and an output stage amplifier. The variable compensation capacitor is disposed between the output terminal of the error amplifier and the output terminal of the output stage amplifier. In one embodiment, a NMOS transistor is disposed between the output terminal of the output stage amplifier and the variable compensation capacitor. The variable compensation capacitor may be, e.g., a PMOS transistor with the source and drain tied together. In one embodiment, a plurality of regulators is included on chip, e.g., such as a programmable device, where the output terminals of each regulator is tied together and used to drive the same load.